



**NTH Consultants, Ltd.**

Infrastructure Engineering  
and Environmental Services

1430 Monroe Avenue NW  
Suite 180  
Grand Rapids, MI 49505  
616.451.6270  
616.451.6271 Fax

Mr. Jay Hoekstra  
Senior Planner  
Grand Valley Metropolitan Council  
678 Front Avenue NW, Suite 200  
Grand Rapids, Michigan 49504

March 30, 2012  
NTH Project No. 74-091509

**RE: Wealthy Jefferson Project  
300 & 316 Wealthy St SE and 406 Lafayette  
Grand Rapids, MI 49503  
Environmental Due Diligence  
Phase Nos. 03H18 and 03P14**

Dear Mr. Hoekstra,

Attached are the data files collected for the Wealthy Jefferson Project during the Environmental Due Diligence Process. The data files include:

- Environmental Data Resources Reports
- Phase II Figures, Boring Logs, Chemical Data Tables and Laboratory Data Reports

We appreciate the opportunity to be of service to you. Should you have any questions or need additional information, please feel free to contact us at 517-451-6260.

Sincerely,

NTH Consultants, Ltd.

Steven L. Crider  
Project Professional

Brian Smits, PE  
Sr. Vice President

SLC/BSS/als

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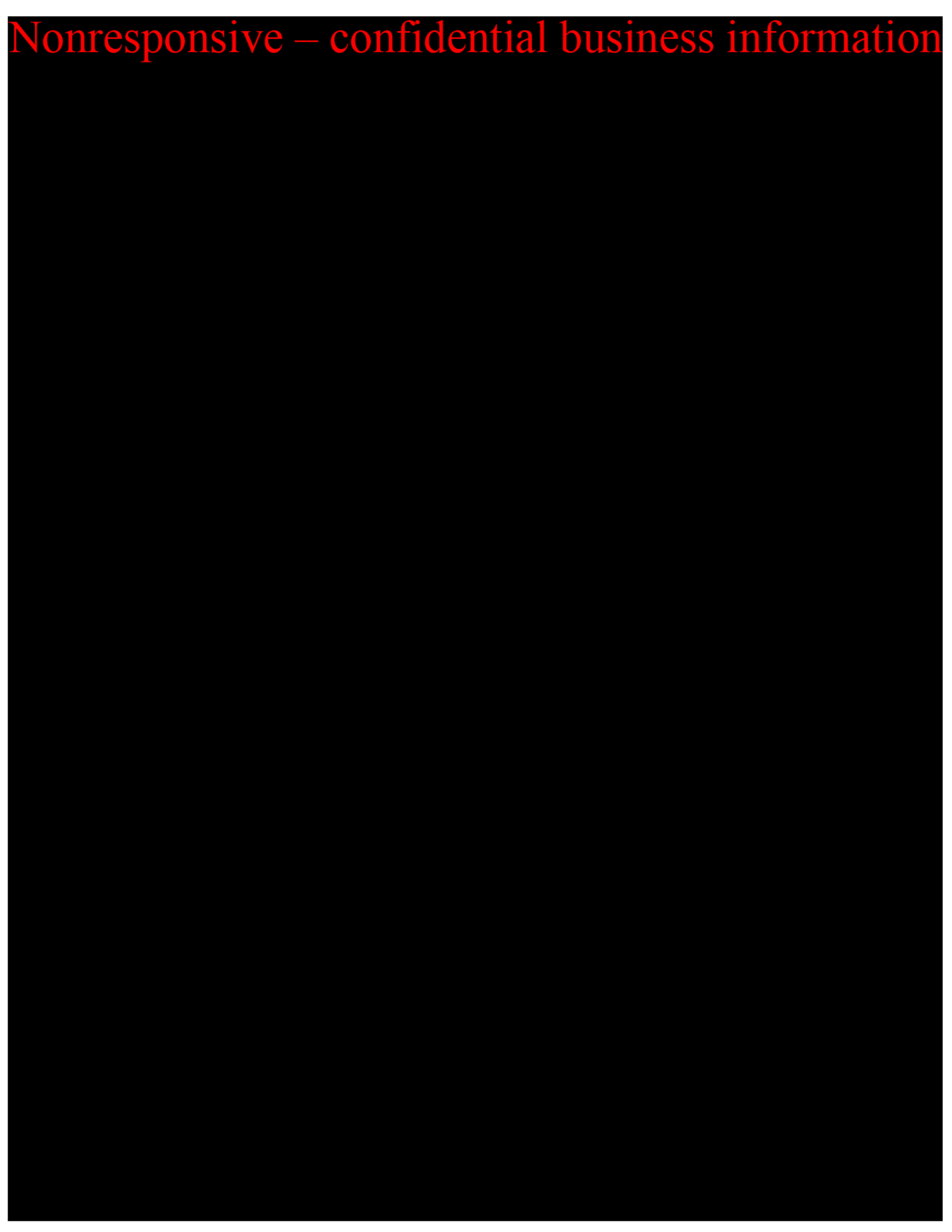
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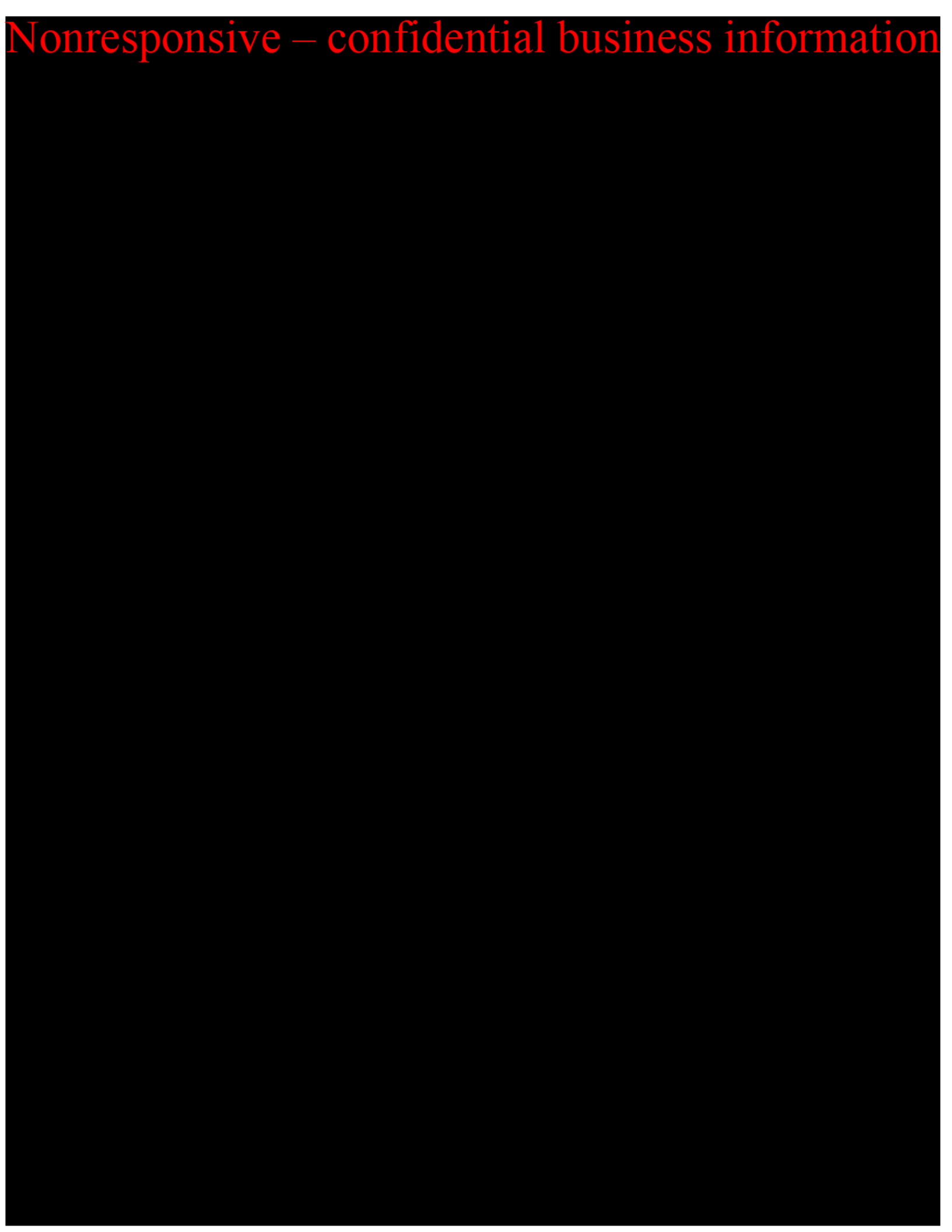
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Map ID  
Direction  
Distance  
Elevation

MAP FINDINGS

Site

Database(s)

EDR ID Number  
EPA ID Number

**A1**  
**Target**  
**Property**

**A AND A DRY CLEANERS**  
**300 WEALTHY ST SE**  
**GRAND RAPIDS, MI 49503**

**FINDS** **1007133984**  
**N/A**

**Site 1 of 4 in cluster A**

**Actual:**  
**673 ft.**

FINDS:

Registry ID: 110015817507

Environmental Interest/Information System

RCRAInfo is a national information system that supports the Resource Conservation and Recovery Act (RCRA) program through the tracking of events and activities related to facilities that generate, transport, and treat, store, or dispose of hazardous waste. RCRAInfo allows RCRA program staff to track the notification, permit, compliance, and corrective action activities required under RCRA.

**A2**  
**Target**  
**Property**

**A AND A DRY CLEANERS**  
**300 WEALTHY ST SE**  
**GRAND RAPIDS, MI 49503**

**RCRA-NonGen** **1007098728**  
**MIK562824847**

**Site 2 of 4 in cluster A**

**Actual:**  
**673 ft.**

RCRA-NonGen:

Date form received by agency: 06/01/2008

Facility name: A AND A DRY CLEANERS  
Facility address: 300 WEALTHY ST SE  
GRAND RAPIDS, MI 49503

EPA ID: MIK562824847  
Mailing address: 4669 CRANWOOD AVE SW  
WYOMING, MI 49509

Contact: DAI WHANG  
Contact address: 300 WEALTHY ST SE  
GRAND RAPIDS, MI 49503

Contact country: US  
Contact telephone: (616) 940-4166  
Contact email: Not reported

EPA Region: 05  
Land type: Other land type  
Classification: Non-Generator

Description: Handler: Non-Generators do not presently generate hazardous waste

Owner/Operator Summary:

Owner/operator name: NO ACTIVE O/OP AS NOT GENERATING WASTE  
Owner/operator address: Not reported

Not reported  
Owner/operator country: Not reported  
Owner/operator telephone: Not reported  
Legal status: Private

Owner/Operator Type: Operator  
Owner/Op start date: 06/02/2008  
Owner/Op end date: Not reported

Owner/operator name: NO ACTIVE O/OP AS NOT GENERATING WASTE  
Owner/operator address: Not reported  
Not reported  
Owner/operator country: Not reported



Map ID  
Direction  
Distance  
Elevation

MAP FINDINGS

Site

Database(s)

EDR ID Number  
EPA ID Number

**A AND A DRY CLEANERS (Continued)**

**1007098728**

Owner/operator telephone: Not reported  
Legal status: Private  
Owner/Operator Type: Owner  
Owner/Op start date: 06/02/2008  
Owner/Op end date: Not reported

Handler Activities Summary:

U.S. importer of hazardous waste: No  
Mixed waste (haz. and radioactive): No  
Recycler of hazardous waste: No  
Transporter of hazardous waste: No  
Treater, storer or disposer of HW: No  
Underground injection activity: No  
On-site burner exemption: No  
Furnace exemption: No  
Used oil fuel burner: No  
Used oil processor: No  
User oil refiner: No  
Used oil fuel marketer to burner: No  
Used oil Specification marketer: No  
Used oil transfer facility: No  
Used oil transporter: No

Historical Generators:

Date form received by agency: 03/10/2003  
Facility name: A AND A DRY CLEANERS  
Classification: Conditionally Exempt Small Quantity Generator

Hazardous Waste Summary:

Waste code: D001  
Waste name: IGNITABLE HAZARDOUS WASTES ARE THOSE WASTES WHICH HAVE A FLASHPOINT OF LESS THAN 140 DEGREES FAHRENHEIT AS DETERMINED BY A PENSKEY-MARTENS CLOSED CUP FLASH POINT TESTER. ANOTHER METHOD OF DETERMINING THE FLASH POINT OF A WASTE IS TO REVIEW THE MATERIAL SAFETY DATA SHEET, WHICH CAN BE OBTAINED FROM THE MANUFACTURER OR DISTRIBUTOR OF THE MATERIAL. LACQUER THINNER IS AN EXAMPLE OF A COMMONLY USED SOLVENT WHICH WOULD BE CONSIDERED AS IGNITABLE HAZARDOUS WASTE.

Violation Status: No violations found

Evaluation Action Summary:

Evaluation date: 06/14/2007  
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE  
Area of violation: Not reported  
Date achieved compliance: Not reported  
Evaluation lead agency: State

Map ID  
Direction  
Distance  
Elevation

MAP FINDINGS

Site

Database(s)

EDR ID Number  
EPA ID Number

**A3**  
**Target**  
**Property**

**A & A CLEANERS**  
**300 WEALTHY ST SE**  
**GRAND RAPIDS, MI 49503**

**LUST**  
**UST**

**U003327820**  
**N/A**

**Site 3 of 4 in cluster A**

**Actual:**  
**673 ft.**

**LUST:**

Facility ID: 00004307  
Source: STATE OF MICHIGAN  
Owner Name: A & A Cleaners  
Owner Address: 300 Wealthy St SE  
Owner City,St,Zip: Grand Rapids, MI 49503-5352  
Owner Contact: Not reported  
Owner Phone: (616) 451-0279  
Country: USA  
District: Grand Rapids District Office  
Site Name: A & A Cleaners  
Latitude: 42.9556630000  
Longitude: -85.6615330000  
Date of Collection: 01/11/2001  
Method of Collection: Address Matching-House Number  
Accuracy: 100  
Accuracy Value Unit: FEET  
Horizontal Data: NAD83  
Point Line Area: POINT  
Desc Category: Plant Entrance (Freight)

Leak Number: C-0472-98  
Release Date: 06/08/1998  
Substance Released: Gasoline  
Release Status: Open  
Release Closed Date: Not reported

**UST:**

Facility ID: 00004307  
Facility Type: CLOSED  
Latitude: 42.9556630000  
Longitude: -85.6615330000  
Owner Name: A & A Cleaners  
Owner Address: 300 Wealthy St SE  
Owner City,St,Zip: Grand Rapids, MI 49503-5352  
Owner Country: USA  
Owner Contact: Not reported  
Owner Phone: (616) 451-0279  
Contact: DAI WHANG  
Contact Phone: (616) 457-0279  
Date of Collection: 01/11/2001  
Accuracy: 100  
Accuracy Value Unit: FEET  
Horizontal Datum: NAD83  
Source: STATE OF MICHIGAN  
Point Line Area: POINT  
Desc Category: Plant Entrance (Freight)  
Method of Collection: Address Matching-House Number

Tank ID: 1  
**Tank Status: Removed from Ground**  
Capacity: 6000  
Install Date: 01/10/1982  
Product: Gasoline

Map ID  
Direction  
Distance  
Elevation

MAP FINDINGS

Site

Database(s)

EDR ID Number  
EPA ID Number

**A & A CLEANERS (Continued)**

**U003327820**

Remove Date: 06/08/1998  
Tank Release Detection: Not reported  
Pipe Realease Detection: Not reported  
Piping Material: Galvanized Steel  
Piping Type: Suction: Valve at Tank  
Constr Material: Asphalt Coated or Bare Steel  
Impressed Device: No

Tank ID: 2  
**Tank Status: Removed from Ground**  
Capacity: 6000  
Install Date: 01/10/1982  
Product: Gasoline  
Remove Date: 06/08/1998  
Tank Release Detection: Not reported  
Pipe Realease Detection: Not reported  
Piping Material: Galvanized Steel  
Piping Type: Suction: Valve at Tank  
Constr Material: Asphalt Coated or Bare Steel  
Impressed Device: No

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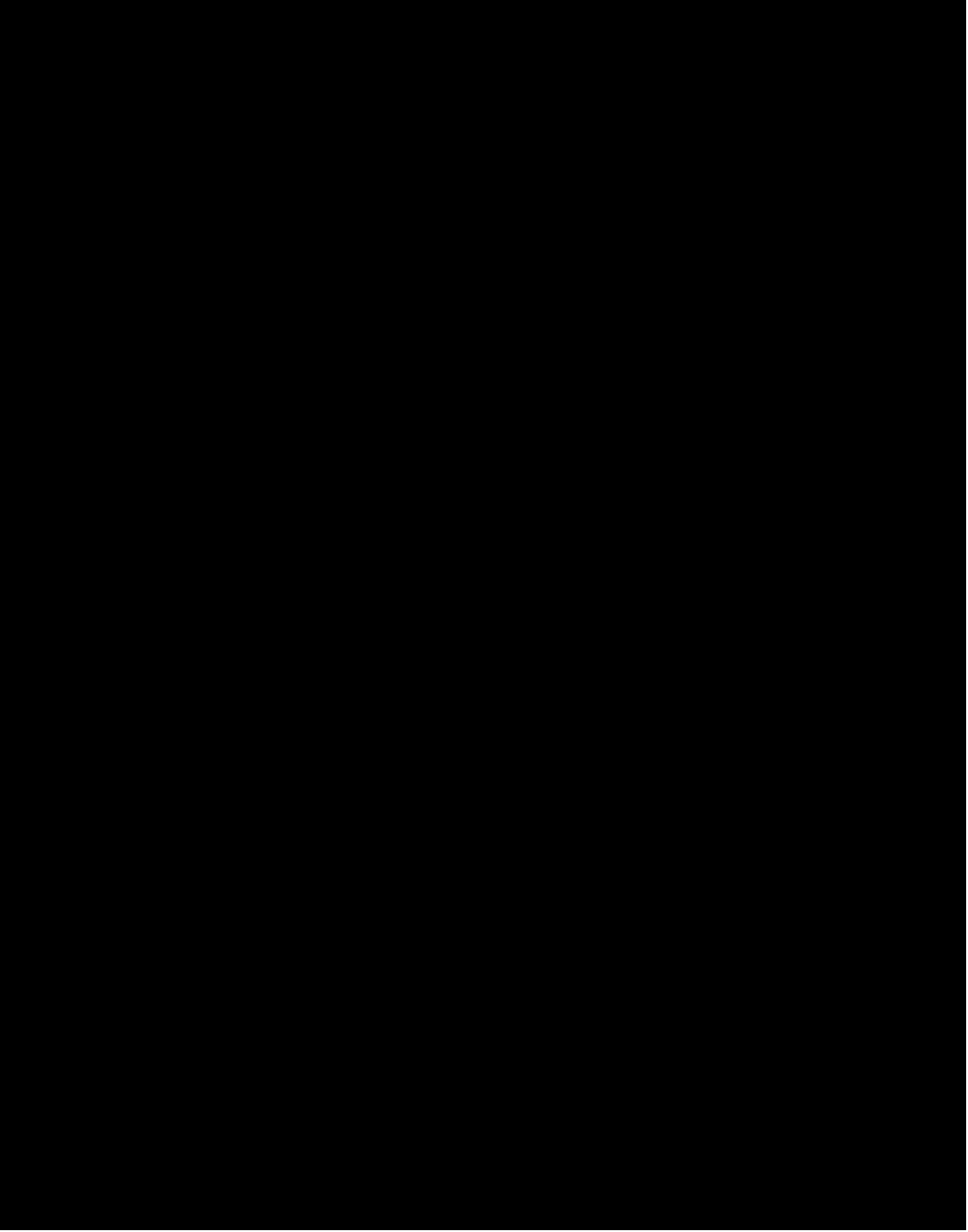


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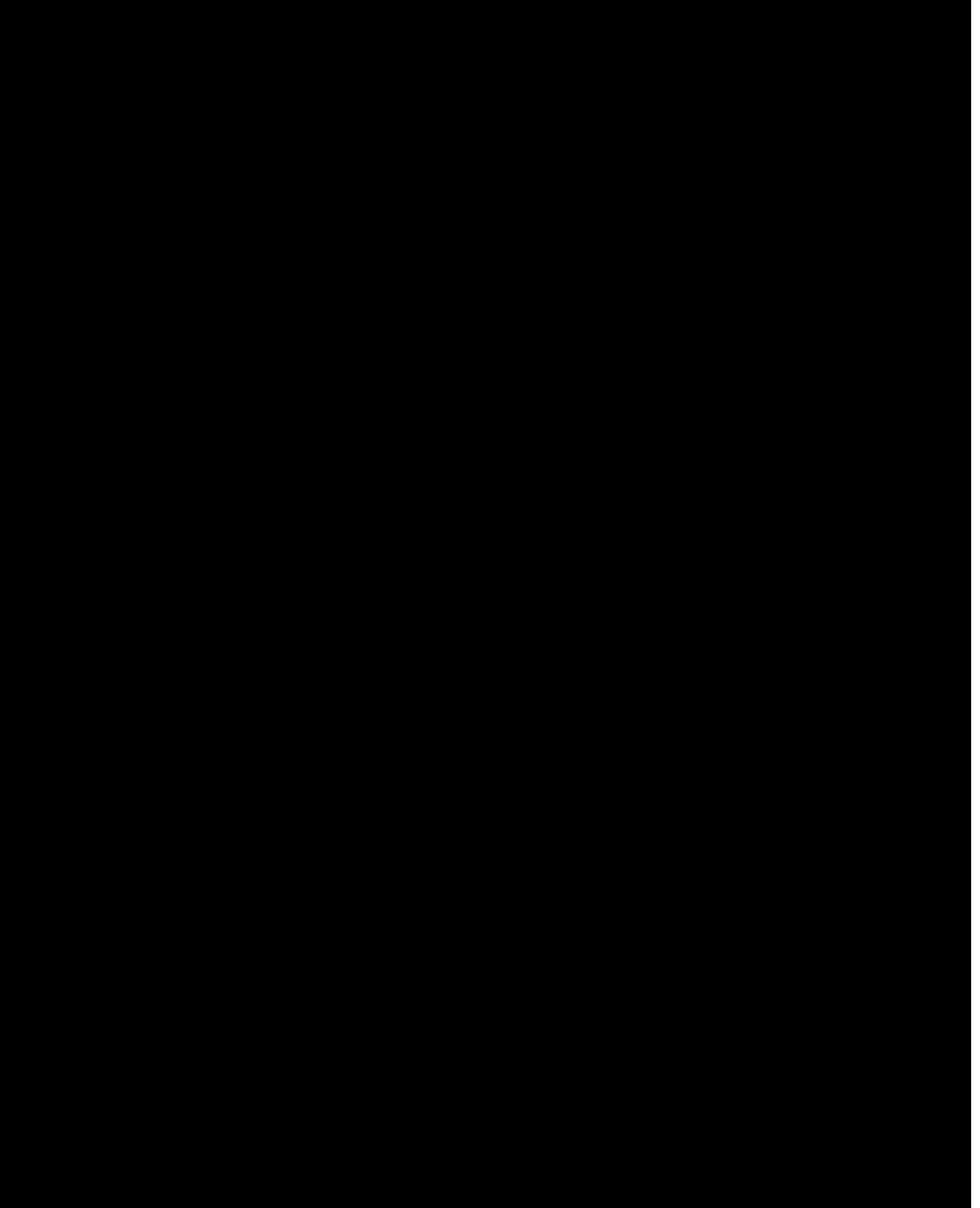


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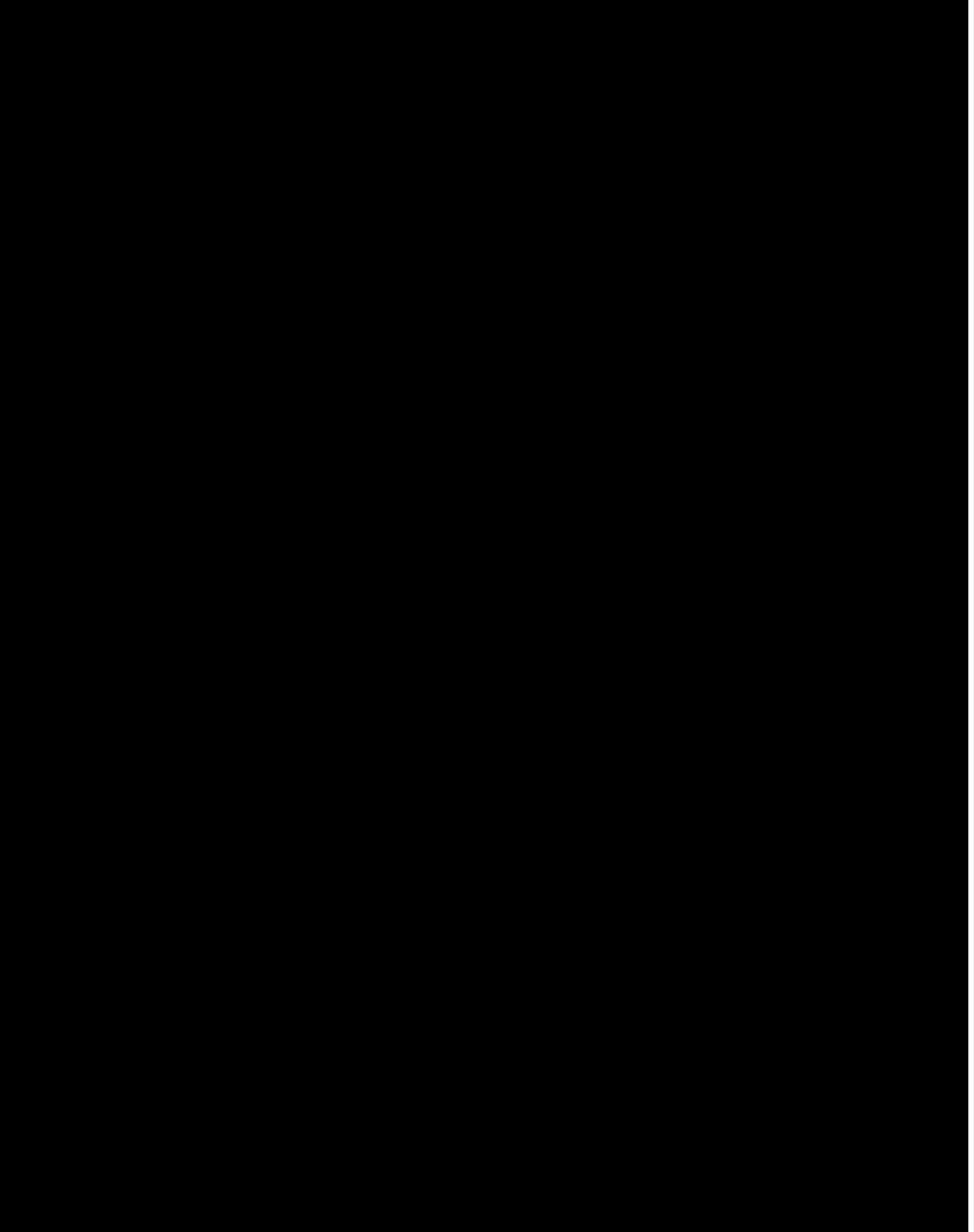
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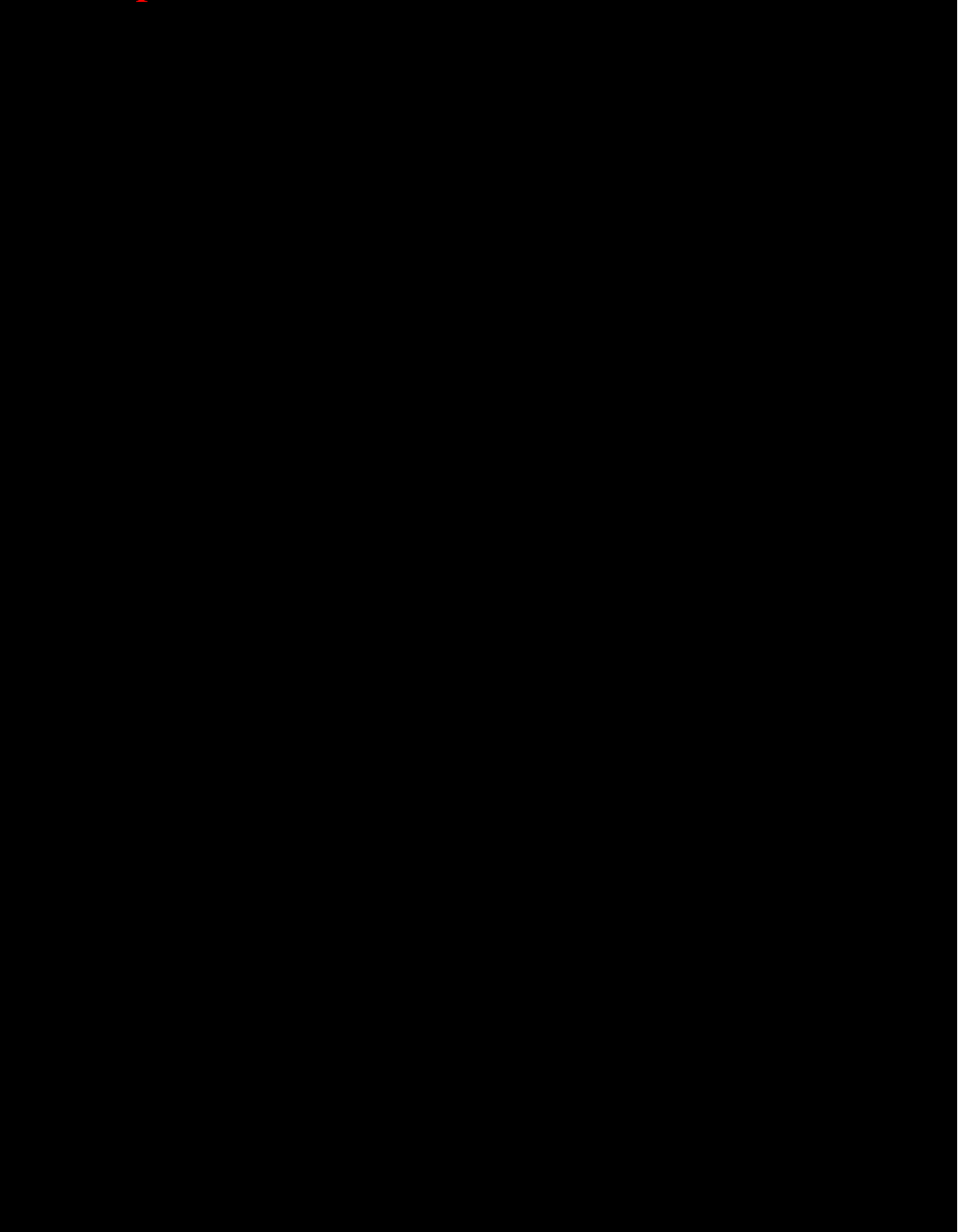
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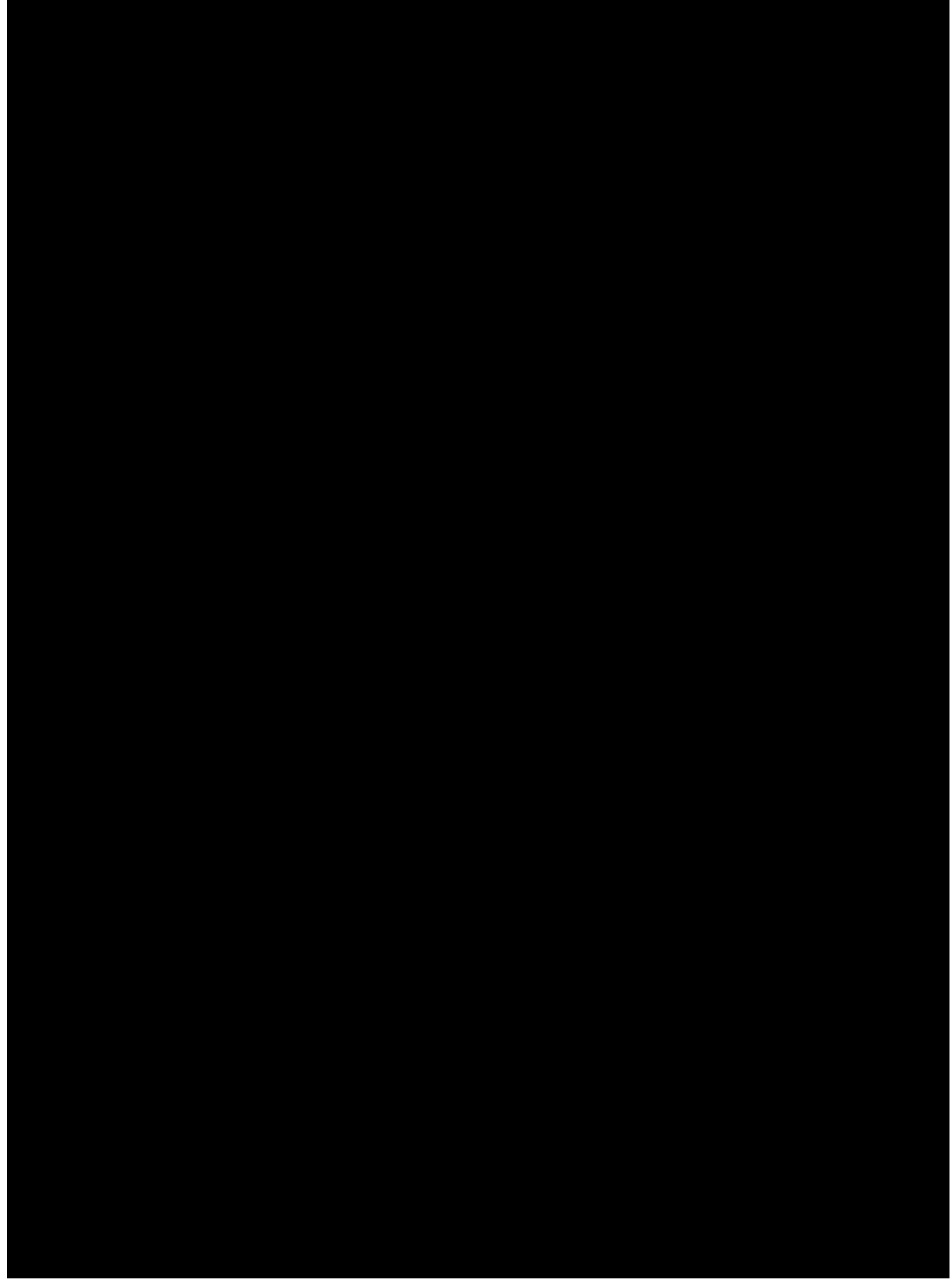
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## **City Directory Images**

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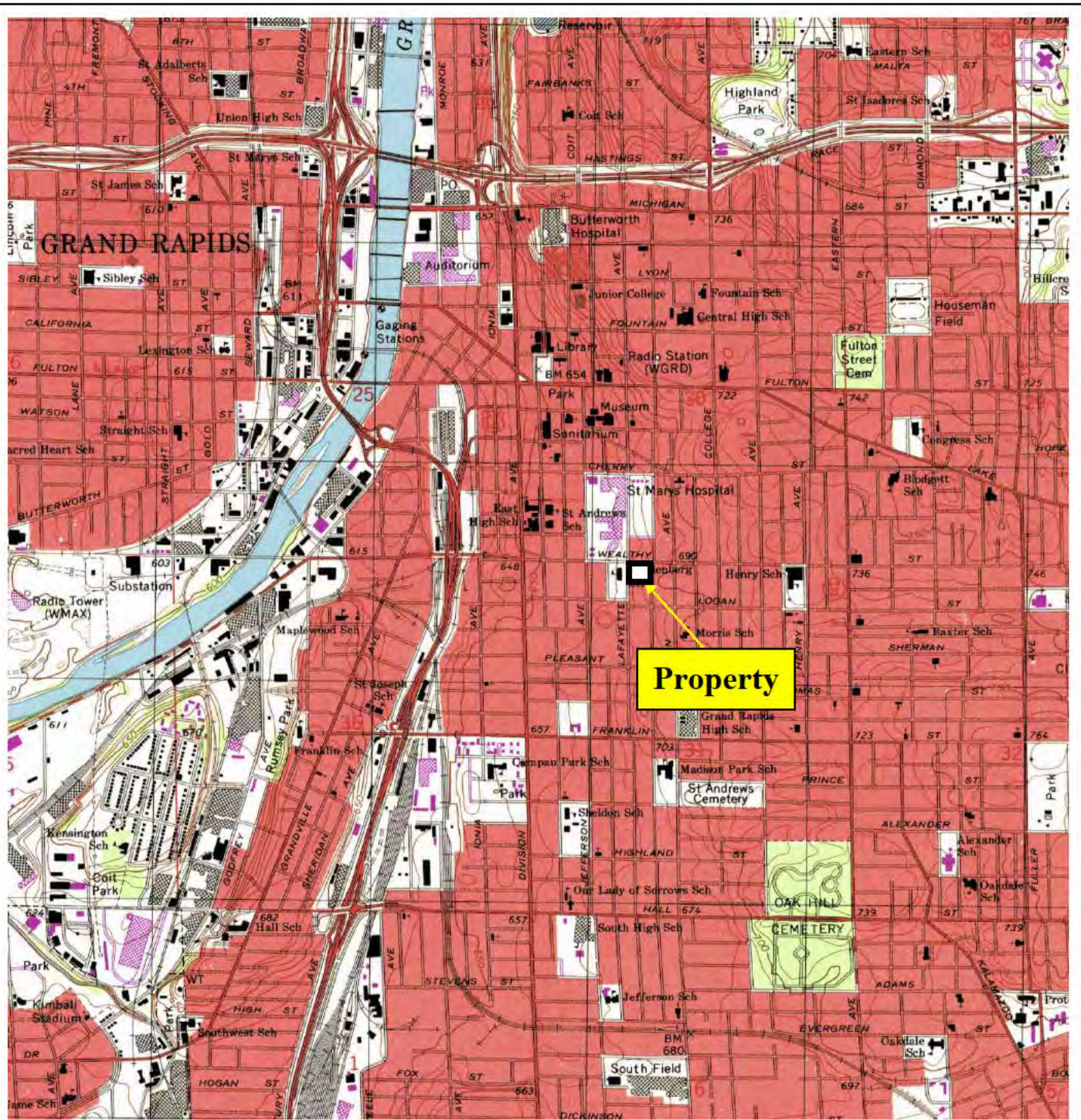
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Project No.:  
74-091509-03P14

Scale:  
1:24,000

Project Name:

**300 & 316 Wealthy St SE and 406 Lafayette Ave SE  
Grand Rapids, MI**

Title:

**Property Location Map**

Drawn By:  
MJT  
Checked By:  
GRJ



**NTH Consultants, Ltd.**  
Infrastructure Engineering and Environmental Services

Figure No.:

**1**









PROJECT NO: 74-091509-03P14			NTH CONSULTANTS, LTD.			SHEET 1 OF 2		
LOG OF GEOPROBES								
PROBE NO.	GROUND SURFACE ELEV.	DEPTH (FT)	SOIL DESCRIPTION	DISCRETE SAMPLE INFO.				
				SAMPLE NO.	DEPTH (FT)		PID READING (PPM)	
					FROM	TO		
B-1		0-0.5	ASPHALT	S-1* (1.5')	0	2	—	
		0.5-2.0	DARK BROWN MOIST SAND, MEDIUM TO COARSE GRAIN, TRACE GRAVEL	S-2	2	4	—	
		2.0-8.0	BROWN MOIST CLAY	S-3	4	6	—	
		8.0-9.0	BROWN SAND, F NE TO MEDIUM	S-4	6	8	—	
		9.0-20.0	BROWN MOIST CLAY	S-5	8	10	—	
				S-6	10	12	—	
				S-7	12	14	—	
				S-8	14	16	—	
				S-9	16	20	—	
				GROUNDWATER WAS NOT ENCOUNTERED				
			END OF BOR NG					
B-2		0-0.5	ASPHALT	S-1	0	2	—	
		0.5-3.0	BROWN MOIST SAND, MEDIUM TO COARSE GRAIN, TRACE GRAVEL	S-2	2	4	—	
		3.0-4.0	LIGHT BROWN SAND TO S LT, FINE TO MEDIUM GRAIN,	S-3* (5.5')	4	6	—	
		4.0-5.0	BROWN MOIST CLAY TO SAND	S-4	6	8	—	
		5.0-6.0	BROWN & BLACK MOIST CLAY, TRACE SAND	S-5	8	10	—	
		6.0-10.0	BROWN MOIST CLAY, TRACE SAND					
				GROUNDWATER WAS NOT ENCOUNTERED				
			END OF BOR NG					
B-3		0-0.5	GRASS	S-1	0	2	0	
		0.5-1.0	TOPSOIL	S-2	2	4	0	
		1.0-2.0	BROWN SAND, F NE TO MEDIUM GRAIN, TRACE GRAVEL, ODOR	S-3* (5')	4	6	0	
		2.0-4.0	BROWN MOIST CLAY, TRACE SAND	S-4	6	8	0	
		4.5-5.0	BROWN MOIST CLAY	S-5	8	10	0	
		5.0-5.5	BROWN MOIST CLAY, TRACE SAND/SILT	S-6	10	12	0	
		5.5-7.5	BROWN MOIST CLAY, TRACE SAND					
		7.5-8.0	BLACK & DARK GREY SAND, F NE TO MEDIUM GRAIN,					
		8.0-8.5	BLACK & DARK GREY SAND, TRACE SILT					
		8.5-12	BROWN MOIST CLAY, TRACE SAND					
			GROUNDWATER WAS ENCOUNTERED AT 8.0 FT*					
			END OF BOR NG					
NOTES:								
[1] GEOPROBES BACKFILLED WITH HYDRATED BENTONITE CHIPS AFTER OBTAINING SO L AND/OR WATER SAMPLES.								
[2] GEOPROBE DRILLING INSPECTED BY AARON LAMMERS OF NTH CONSULTANTS, LTD.								
[3] SOIL CLASSIFICATION BASED SOLELY ON VISUAL OBSERVATION.								
[4] * - SAMPLE SUBMITTED FOR ANALYTICAL TESTING.								
DRILLED BY: La Pointe Environmental			DATE: November 21, 2011			FIGURE NO: 3		



PROJECT NO: 74-091509-03P14		NTH CONSULTANTS, LTD.		SHEET 2 OF 2			
LOG OF GEOPROBES							
PROBE NO.	GROUND SURFACE ELEV.	DEPTH (FT)	SOIL DESCRIPTION	DISCRETE SAMPLE INFO.			
				SAMPLE NO.	DEPTH (FT) FROM      To	PID READING (PPM)	
B-4		0-0.5	GRASS	S-1	0	2	0
		0.5-1.0	TOPSOIL	S-2	2	4	0
		1.0-7.0	LIGHT BROWN SAND, F NE GRAIN, (BEACH SAND)	S-3* (6')	4	6	0
		7.0-10.0	WET LIGHT BROWN SAND	S-4	6	8	0
		10.0-12.0	BROWN MOIST CLAY	S-5	8	10	0
				S-6	10	12	0
		GROUNDWATER WAS ENCOUNTERED AT 7.0 FT* END OF BOR NG					
B-5		0-0.5	GRASS	S-1	0	2	0
		0.5-1.0	TOPSOIL	S-2	2	4	0
		1.0-4.0	BROWN MOIST CLAY, TRACE SAND & GRAVEL	S-3* (4.5')	4	6	0
		4.0-4.5	WHITE CONCRETE	S-4	6	8	0
		4.5-7.0	WET BROWN S LT, TRACE SAND	S-5	8	10	0
		7.0-8.5	BROWN MOIST CLAY, TRACE SAND	S-6	10	12	0
		8.5-9.0	BROWN SAND, MEDIUM GRAIN, TRACE SILT				
		9.0-12.0	BROWN MOIST CLAY, TRACE SAND				
GROUNDWATER WAS ENCOUNTERED AT 7.0 FT* END OF BOR NG							
B-6		0-0.5	GRASS	S-1* (0.5')	0	2	0
		0.5-1.0	TOPSOIL	S-2	2	4	0
		1.0-1.5	BLACK SAND, F NE TO MEDIUM GRAIN, TRACE ORGANICS				
		1.5-4.0	BROWN MOIST CLAY				
GROUNDWATER WAS NOT ENCOUNTERED END OF BOR NG							
<b>NOTES:</b> [5] GEOPROBES BACKFILLED WITH HYDRATED BENTONITE CHIPS AFTER OBTAINING SO L AND/OR WATER SAMPLES. [6] GEOPROBE DRILLING INSPECTED BY AARON LAMMERS OF NTH CONSULTANTS, LTD. [7] SOIL CLASSIFICATION BASED SOLELY ON VISUAL OBSERVATION. [8] * - SAMPLE SUBMITTED FOR ANALYTICAL TESTING. [9] GEOPROBES BACKFILLED WITH HYDRATED BENTONITE CHIPS AFTER OBTAINING SO L AND/OR WATER SAMPLES. [10] GEOPROBE DRILLING INSPECTED BY AARON LAMMERS OF NTH CONSULTANTS, LTD. [11] SOIL CLASSIFICATION BASED SOLELY ON VISUAL OBSERVATION. [12] * - SAMPLE SUBMITTED FOR ANALYTICAL TESTING.							
DRILLED BY: La Pointe Environmental		DATE: November 21, 2011		FIGURE NO: 3			



LEGEND

- CB/NB Commercial Building with No Basement
- R/B Residential Building with Basement
- Approximate Property Boundary
- Parcel Boundary
- B-1 Soil Boring Location



**NTH Consultants, Ltd.**  
Infrastructure Engineering  
and Environmental Services

NTH PROJECT No: 74-091509-03P14	CAD FILE NAME: Site Plan With Borings And Data
DESIGNED BY: LMM	PLOT DATE: December 1, 2011
DRAWN BY: LMM	DRAWING SCALE: 1" = 40'
CHECKED BY: GLJ	INCEPTION DATE: December 1, 2011

Boring Location Plan  
300 & 316 Wealthy and 406 Lafayette  
Grand Rapids, Michigan

FIGURE

2

**TABLE No. 2**  
**Summary of Analytical Data**  
**Water Samples Collected on November 21, 2011**  
**300 & 316 Wealthy St. SE and Lafayette Ave. SE**  
**Grand Rapids, Michigan**

SAMPLE ID	B-3W	B-4W	B-4W DUP.	TRIP BLANK	Part 201 Generic Cleanup Criteria (MDEQ Operational Memorandum No. 1, March 25, 2011 RIA)									
Sample Depth (Feet Below Grade)	-	-	-	-	Drinking Water Criteria (DW)	Nonresidential Drinking Water Criteria (NRDW)	Groundwater Surface Water Interface Criteria (GSI)	Groundwater Volatilization to Indoor Air Inhalation Criteria (GVIIIC)	Nonresidential Groundwater Volatilization to Indoor Air Inhalation Criteria (NRGVIIIC)	Groundwater Contact Criteria (GCC)	Water Solubility (WS)	Flammability and Explosivity Screening Level (FESL)	Acute Inhalation Screening Level (AISL)	
Collection Date	11/21/2011	11/21/2011	11/21/2011	11/21/2011										
Compound (ug/kg)	CAS #	Conc.	Conc.	Conc.	Conc.									
VOCs and PNAs														
Benzene (l)	71-43-2	41	<1.0	<1.0	<1.0	5.0 (A)	5.0 (A)	200 (X)	5,600	35,000	11,000	1.75E+06	68,000	67,000
n-Butylbenzene	104-51-8	17	6.2	5	<1.0	80	230	ID	ID	ID	5,900	NA	ID	ID
sec-Butylbenzene	135-98-8	4.4	8.3	5.7	<1.0	80	230	ID	ID	ID	4,400	NA	ID	ID
trans-1,2-Dichloroethylene	156-60-5	1.1	<1.0	<1.0	<1.0	100 (A)	100 (A)	1,500 (X)	85,000	2,00E+05	2,20E+05	6,30E+06	2,30E+05	ID
Ethylbenzene (l)	100-41-4	380	9.5	8.1	<1.0	74 (E)	74 (E)	18	1.10E+05	1.7E+5 (S)	1.7E+5 (S)	1.69E+05	43,000	1.7E+5 (S)
Isopropyl benzene	98-82-8	17	32	23	<5.0	800	2,300	28	56,000 (S)	56,000 (S)	56,000 (S)	56,000	29,000	ID
2-Methylnaphthalene	91-57-6	21	<5.0	<5.0	<5.0	260	750	19	25,000 (S)	25,000 (S)	25,000 (S)	24,600	ID	ID
Naphthalene	91-20-3	39	47	35	<5.0	520	1,500	11	31,000 (S)	31,000 (S)	31,000 (S)	31,000	NA	31,000 (S)
n-Propylbenzene (l)	103-65-1	54	120	79	<1.0	80	230	ID	ID	ID	15,000	NA	ID	ID
Toluene (l)	108-88-3	3.5	1.1	1.1	<1.0	790 (E)	790 (E)	270	5.3E+5 (S)	5.3E+5 (S)	5.3E+5 (S)	5.26E+05	61,000	ID
1,2,3-Trimethyl benzene	526-73-8	78	36	32	<1.0	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trimethyl benzene (l)	95-63-6	690	27	34	<1.0	63 (E)	63 (E)	17	56,000 (S)	56,000 (S)	56,000 (S)	55,890	56,000 (S)	ID
1,3,5-Trimethyl benzene (l)	108-67-8	100	4.5	7.4	<1.0	72 (E)	72 (E)	45	61,000 (S)	61,000 (S)	61,000 (S)	61,150	ID	ID
Xylenes (l)	1330-20-7	1,300	72	68	<3.0	280 (E)	280 (E)	41	1.9E+5 (S)	1.9E+5 (S)	1.9E+5 (S)	1.86E+05	70,000	1.9E+5 (S)
2-Methylnaphthalene	91-57-6	21	<5.0	<5.0	<5.0	260	750	19	25,000 (S)	25,000 (S)	25,000 (S)	24,600	ID	ID
All other Analyzed VOCs and PNAs		ND	ND	ND	ND	Various	Various	Various	Various	Various	Various	Various	Various	Various
METALS														
Arsenic	7440-38-2	----	12	----	----	10 (A)	10 (A)	10	NLV	NLV	4,300	NA	ID	ID
Barium (B)	7440-39-3	----	750	----	----	2,000 (A)	2,000 (A)	12,000 (G)	NLV	NLV	1.40E+07	NA	ID	ID
Cadmium (B)	7440-43-9	----	11	----	----	5.0 (A)	5.0 (A)	4.6 (G,X)	NLV	NLV	1.90E+05	NA	ID	ID
Chromium, Total	7440-47-3	----	68	----	----	100 (A)	100 (A)	11	NLV	NLV	4.60E+05	NA	ID	ID
Copper (B)	7440-50-8	----	12	----	----	1,000 (E)	1,000 (E)	20.6 (G)	NLV	NLV	7.40E+06	NA	ID	ID
Lead (B)	7439-92-1	----	130	----	----	4.0 (L)	4.0 (L)	29 (G,X)	NLV	NLV	ID	NA	ID	ID
Zinc (B)	7440-66-6	----	350	----	----	2,400	5,000 (E)	270 (G)	NLV	NLV	1.10E+08	NA	ID	ID

**NOTES:**

201 Criteria Effective Date March 25th, 2011

Refer to 201 Criteria tables for criteria footnote definitions

SAMPLES COLLECTED BY NTH CONSULTANTS PERSONNEL AND ANALYZED BY FIBERTEC ENVIRONMENTAL SERVICES OF HOLT, MICHIGAN.

MG/KG - MILLIGRAMS PER KILOGRAM; MG/L - MILLIGRAMS PER LITER (= PARTS PER MILLION); µG/KG - MICROGRAMS PER KILOGRAM; µG/L - MICROGRAMS PER LITER (= PARTS PER BILLION).

A shaded cell indicates that one or more of the criterion have been exceeded.

A **bold** number indicates the concentration is higher than the criterion and below the Statewide Default therefore, the criterion is not exceeded.

NA = CRITERIA NOT APPLICABLE OR NOT AVAILABLE

ND = NON DETECT

(ID) - INADEQUATE DATA TO DEVELOP CRITERION.

NLV - CHEMICAL IS NOT LIKELY TO VOLATILIZE UNDER MOST CONDITIONS.

----- NOT TESTED FOR INDICATED PARAMETER.

(A) = CRITERION IS THE STATE OF MICHIGAN DRINKING WATER STANDARD ESTABLISHED PURSUANT TO SECTION 5 OF 1976 PA 399, MCL 325. 1005.

(E) = CRITERION IS THE AESTHETIC DRINKING WATER VALUE, AS REQUIRED BY SECTION 20120A(5) OF THE NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION ACT, 1994 PA 451 AS AMENDED (NREPA)

(G) = CRITERIA IS PH AND/OR WATER HARDNESS DEPENDENT. A HARDNESS VALUE OF 265 MG CaCO<sub>3</sub>/L HAS BEEN USED. REFER TO FOOTNOTE G IN MDEQ OP. MEMO. NO. 1, ATTACHMENT 1, DATED DEC 14, 2010.



TABLE No. 1 Summary of Analytical Data Soil Samples Collected on November 21, 2011 300 &316 Wealthy St. SE and 406 Lafayette Ave. SE Grand Rapids, Michigan																				
SAMPLE ID		B-1 (1.5')	B-2 (5.5')	B-3 (5')	B-4 (6')	B-5 (4.5')	B-6 (6")	B-7 (2.5')	B-7 (2.5') DUP.	PART 201 RESIDENTIAL SOIL CLEANUP CRITERIA (MDEQ Operational Memorandum No. 1, March 25, 2011)										
Sample Depth (Feet Below Grade)		1.5'	5.5'	5'	6'	4 5'	6'	2 5'	-	State-Wide Default Background	Drinking Water Protection Criteria	Groundwater Surface Water Interface Protection Criteria	Groundwater Contact Protection (GCP) Criteria	Soil Volatilization to Indoor Air Inhalation (SVIIC) Criteria	Infinite Source Volatile Soil Inhalation Criteria (VSIC-Infinite)	Finite VSIC for 5 Meter Source Thickness (VSIC-5 Meter)	Finite VSIC for 2 Meter Source Thickness (VSIC-2 Meter)	Particulate Soil Inhalation Criteria (PSIC)	Direct Contact Criteria (DC)	Soil Saturation (Csat) Screening Levels
Collection Date		11/21/2011	11/21/2011	11/21/2011	11/21/2011	11/21/2011	11/21/2011	11/21/2011	11/21/2011											
Compound (ug/kg)		CAS #	Conc.	Conc.	Conc.	Conc.	Conc.	Conc.	Conc.											
VOCs and PNAs																				
n-Butylbenzene	104-51-8	<50	<50	1,400	<50	<50	<50	<50	<50	NA	1,600	ID	120,000	ID	ID	ID	ID	2,000,000,000	2,500,000	10,000,000
sec-Butylbenzene	135-98-8	<50	<50	290	<50	<50	<50	<50	<50	NA	1,600	ID	88,000	ID	ID	ID	ID	400,000,000	2,500,000	10,000,000
Ethylbenzene (I)	100-41-4	<50	<50	2,400	<50	<50	<50	<50	<50	NA	1,500	360	1.4E+5 (C)	87,000	720,000	1,000,000	2,200,000	10,000,000,000	1.4E+5 (C)	140,000
Isopropyl benzene	98-82-8	<250	<250	390	<250	<250	<250	<250	<250	NA	91,000	3,200	3.9E+5 (C)	3.9E+5 (C)	1,700,000	1,700,000	2,800,000	5,800,000,000	3.9E+5 (C)	390,000
2-Methylnaphthalene	91-57-6	<330	<330	2,100	<330	<330	<330	<330	<330	NA	57,000	4,200	5,500,000	2,700,000	1,500,000	1,500,000	1,500,000	670,000,000	8,100,000	NA
Naphthalene	91-20-3	<330	<330	1,600	<330	<330	<330	<330	<330	NA	35,000	730	2,100,000	250,000	300,000	300,000	300,000	200,000,000	16,000,000	NA
n-Propylbenzene (I)	103-65-1	<100	<100	2,000	<100	<100	<100	<100	<100	NA	1,600	ID	300,000	ID	ID	ID	ID	1,300,000,000	2,500,000	10,000,000
Tetrachloroethylene	127-18-4	<50	<50	<50	<50	57	150	<50	<50	NA	100	1,200 (X)	88,000 (C)	11,000	180,000	480,000	1,100,000	5,400,000,000	88,000 (C)	88,000
1,2,3-Trimethylbenzene	526-73-8	<100	<100	1,600	<100	<100	<100	<100	<100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trimethylbenzene (I)	95-63-6	<100	<100	10,000	<100	<100	<100	<100	<100	NA	2,100	570	1.1E+5 (C)	1.1E+5 (C)	21,000,000	500,000,000	500,000,000	82,000,000,000	1.1E+5 (C)	110,000
1,3,5-Trimethylbenzene (I)	108-67-8	<100	<100	2,900	<100	<100	<100	<100	<100	NA	1,800	1,100	94,000 (C)	94,000 (C)	16,000,000	380,000,000	380,000,000	82,000,000,000	94,000 (C)	94,000
Vinyl chloride	75-01-4	<40	<40	<40	<40	<40	<40	<40	<40	NA	40	260 (X)	20,000	270	4,200	30,000	73,000	350,000,000	3,800	490,000
Xylenes (I)	1330-20-7	<150	<150	6,200	<150	<150	<150	<150	<150	NA	5,600	820	1.5E+5 (C)	1.5E+5 (C)	46,000,000	61,000,000	130,000,000	290,000,000,000	1.5E+5 (C)	150,000
Acenaphthylene	208-96-8	<330	<330	<330	<330	<330	<330	3,100	410	NA	5,900	ID	440,000	1,600,000	2,200,000	2,200,000	2,200,000	2,300,000,000	1,600,000	NA
Anthracene	120-12-7	<330	<330	<330	<330	<330	<330	2,600	390	NA	41,000	ID	41,000	1.0E+9 (D)	1,400,000,000	1,400,000,000	1,400,000,000	67,000,000,000	230,000,000	NA
Benzo(a)anthracene (Q)	56-55-3	350	<330	<330	<330	<330	510	15,000	2,300	NA	NLL	NLL	NLL	NLV	NLV	NLV	NLV	ID	20,000	NA
Benzo(a)pyrene (Q)	50-32-8	<330	<330	<330	<330	<330	350	18,000	2,800	NA	NLL	NLL	NLL	NLV	NLV	NLV	NLV	1,500,000	2,000	NA
Benzo(b)fluoranthene (Q)	205-99-2	<330	<330	<330	<330	<330	530	25,000	3,700	NA	NLL	NLL	NLL	ID	ID	ID	ID	ID	20,000	NA
Benzo(g,h,i)perylene	191-24-2	<330	<330	<330	<330	<330	<330	7,300	2,100	NA	NLL	NLL	NLL	NLV	NLV	NLV	NLV	800,000,000	2,500,000	NA
Benzo(k)fluoranthene (Q)	207-08-9	<330	<330	<330	<330	<330	<330	9,000	1,300	NA	NLL	NLL	NLL	NLV	NLV	NLV	NLV	ID	200,000	NA
Chrysene (Q)	218-01-9	<330	<330	<330	<330	<330	370	15,000	2,400	NA	NLL	NLL	NLL	ID	ID	ID	ID	ID	2,000,000	NA
Dibenzo(a,h)anthracene (Q)	53-70-3	<330	<330	<330	<330	<330	<330	2,500	470	NA	NLL	NLL	NLL	NLV	NLV	NLV	NLV	ID	2,000	NA
Fluoranthene	206-44-0	400	<330	<330	<330	<330	770	27,000	4,800	NA	730,000	5,500	730,000	1.0E+9 (D)	740,000,000	740,000,000	740,000,000	9,300,000,000	46,000,000	NA
Indeno(1,2,3-cd)pyrene (Q)	193-39-5	<330	<330	<330	<330	<330	<330	9,400	2,200	NA	NLL	NLL	NLL	NLV	NLV	NLV	NLV	ID	20,000	NA
2-Methylnaphthalene	91-57-6	<330	<330	2,100	<330	<330	<330	<330	<330	NA	57,000	4,200	5,500,000	2,700,000	1,500,000	1,500,000	1,500,000	670,000,000	8,100,000	NA
Phenanthrene	85-01-8	<330	<330	<330	<330	<330	480	5,900	1,100	NA	56,000	2,100	1,100,000	2,800,000	160,000	160,000	160,000	6,700,000	1,600,000	NA
Pyrene	129-00-0	<330	<330	<330	<330	<330	610	21,000	3,900	NA	480,000	ID	480,000	1.0E+9 (D)	650,000,000	650,000,000	650,000,000	6,700,000,000	29,000,000	NA
All other Analyzed VOCs and PNAs		ND	ND	ND	ND	ND	ND	ND	ND	Various	Various	Various	Various	Various	Various	Various	Various	Various	Various	Various
METALS																				
Arsenic	7440-38-2	2,500	950	5,400	650	4,100	3,900	20,000	4,900	5,800	4,600	4,600	2,000,000	NLV	NLV	NLV	NLV	720,000	7,600	NA
Barium (B)	7440-39-3	58,000	100,000	41,000	4,700	79,000	86,000	1,100,000	320,000	75,000	1,300,000	790,000 (G,X)	1.0E+9 (D)	NLV	NLV	NLV	NLV	330,000,000	37,000,000	NA
Cadmium (B)	7440-43-9	180	180	87	<50	66	710	1,600	780	1,200	6,000	5,500 (G,X)	230,000,000	NLV	NLV	NLV	NLV	1,700,000	550,000	NA
Chromium, Total	7440-47-3	6,400	7,100	15,000	2,000	10,000	9,600	23,000	23,000	18,000 (total)	30,000	3,300	140,000,000	NLV	NLV	NLV	NLV	260,000	2,500,000	NA
Copper (B)	7440-50-8	9,200	4,700	13,000	1,700	8,600	22,000	50,000	26,000	32,000	5,800,000	120,000 (G)	1.0E+9 (D)	NLV	NLV	NLV	NLV	130,000,000	20,000,000	NA
Lead (B)	7439-92-1	78,000	6,000	7,300	1,200	20,000	180,000	1,800,000	1,400,000	21,000	700,000	5,100,000 (G,X)	ID	NLV	NLV	NLV	NLV	100,000,000	400,000	NA
Mercury, Total	7439-97-6	140	<50	<50	<50	<50	160	2,200	280	130	1,700	50 (M); 1.2	47,000	48,000	52,000	52,000	52,000	20,000,000	160,000	NA
Selenium (B)	7782-49-2	280	<200	<200	<200	<200	460	6,400	820	410	4,000	400	78,000,000	NLV	NLV	NLV	NLV	130,000,000	2,600,000	NA
Silver (B)	7440-22-4	<100	<100	<100	<100	<100	<100	110	120	1,000	4,500	100 (M); 27	200,000,000	NLV	NLV	NLV	NLV	6,700,000	2,500,000	NA
Zinc (B)	7440-66-6	56,000	21,000	33,000	4,900	39,000	150,000	1,300,000	440,000	47,000	2,400,000	270,000 (G)	1.0E+9 (D)	NLV	NLV	NLV	NLV	ID	170,000,000	NA

**NOTES**  
201 Criteria Effective Date March 25th, 2011  
Refer to 201 Criteria tables for criteria footnote definitions  
SAMPLES COLLECTED BY NTH CONSULTANTS PERSONNEL AND ANALYZED BY F BERTEC ENV RONMENTAL SERVICES OF HOLT, MICHIGAN.  
MG/KG - M LLIGRAMS PER K LOGRAM; MG/L - MILLIGRAMS PER LITER (≈ PARTS PER MILLION); µG/KG - MICROGRAMS PER K LOGRAM; µG/L - MICROGRAMS PER LITER (≈ PARTS PER B LLION).  
A shaded cell indicates that one or more of the criterion have been exceeded.  
A **bold** number indicates the concentration is higher than the criterion and below the Statewide Default therefore, the criterion is not exceeded.  
NA = Criteria Not Applicable or Not Available  
NA = CRITERIA NOT APPLICABLE OR NOT AVAILABLE  
ND = NON DETECT  
NLL - CHEMICAL IS NOT L KELY TO LEACH UNDER MOST SO L CONDITIONS.  
NLV - CHEMICAL IS NOT LIKELY TO VOLAT LIZE UNDER MOST CONDITIONS.  
(D) = CALCULATED CRITERIA EXCEEDS 100 PERCENT, HENCE IT IS REDUCED TO 100 PERCENT OR 1.0E+9 PARTS PER B LLIONS (PPB)  
(DD) = HAZARDOUS SUBSTANCE CAUSES DEVELOPMENTAL EFFECTS. RES DENTIAL D RECT CONTACT CRITERIA ARE PROTECTIVE OF BOTH PRENATAL AND POSTNATAL EXPOSURE.  
(G) = CRITERIA IS PH AND/OR WATER HARDNESS DEPENDENT. A HARDNESS VALUE OF 265 MG CAC03/L HAS BEEN USED. REFER TO FOOTNOTE G N MDEQ OP. MEMO. NO. 1, ATTACHMENT 1, DATED DEC 14, 2010.



Nonresponsive – confidential business information



Nonresponsive – confidential business information



Nonresponsive – confidential business information



Nonresponsive – confidential business information



Nonresponsive – confidential business information



[REDACTED]

Nonresponsive – confidential business information



Nonresponsive – confidential business information





Nonresponsive – confidential business information



Nonresponsive – confidential business information



Nonresponsive – confidential business information



Nonresponsive – confidential business information



Nonresponsive – confidential business information



CONFIDENTIAL

Nonresponsive – confidential business information



Nonresponsive – confidential business information



Nonresponsive – confidential business information





Nonresponsive – confidential business information



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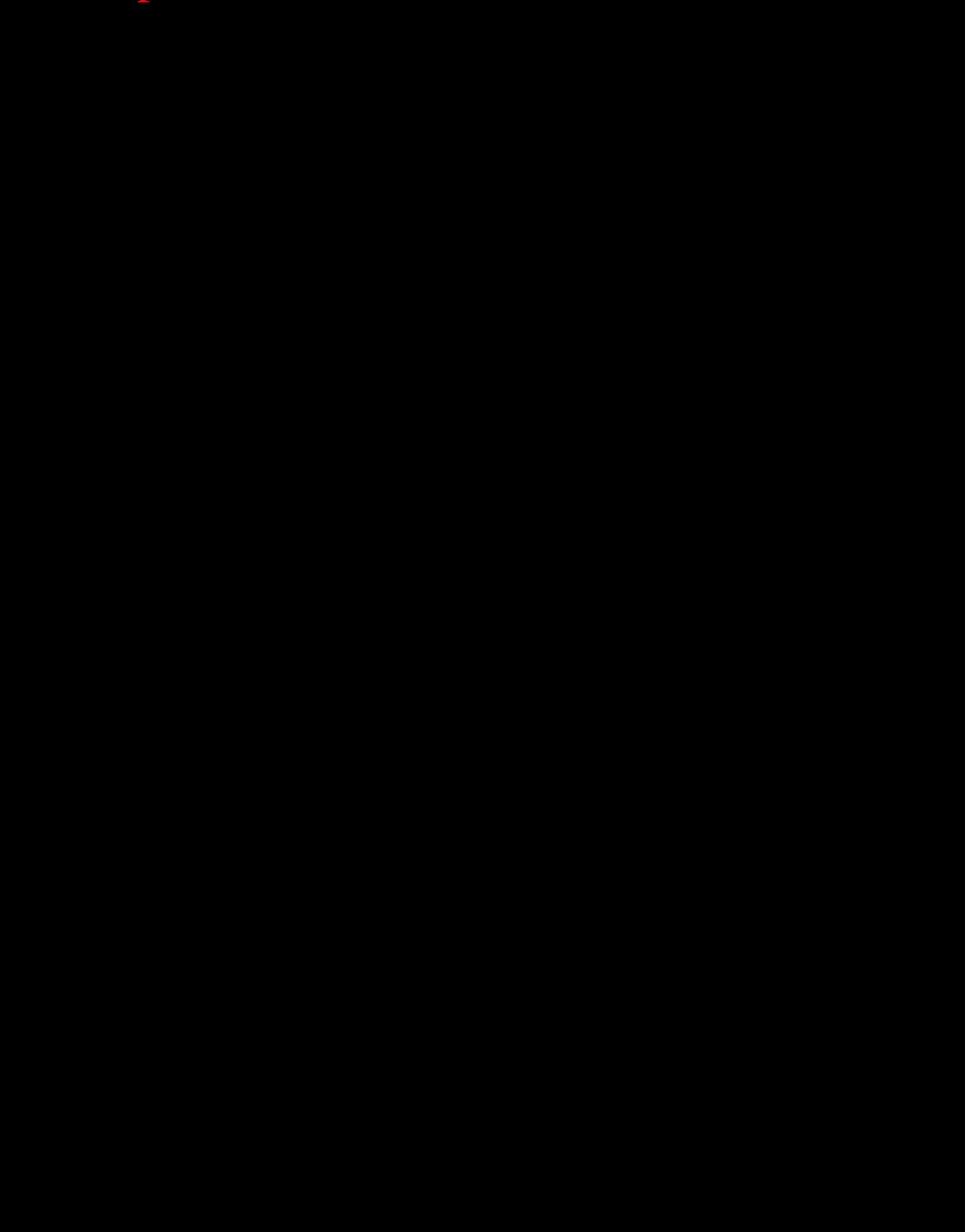
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